**Red Wolf Recovery Action Plan**

Red wolf (*Canis rufus*)

U.S. Fish and Wildlife Service, Southeast Region – Alligator River Red Wolf Recovery Program Office, May 21, 2009

**◘Target: Prevent Extinction and Improve the Red Wolf's Status**

**Red Wolf:**

Status: Endangered

Recovery Priority Number: 5c (high degree of threat/low recovery potential)

Recovery Plan: Red Wolf Recovery/Species Survival Plan, 1990

5-year Review: completed in September, 2007

Other: Listed as endangered on March 11, 1967 (32 FR 4001); Experimental population status of an introduced population of red wolves include: 51 FR 41790, November 19, 1986, and 56 FR 56325, November 4, 1991.

Two non-essential experimental red wolf populations (NEP) were designated in North Carolina and Tennessee. One population was established in 1991 in the Great Smoky Mountains National Park of eastern Tennessee and western North Carolina; this population was discontinued in 1998 primarily due to poor pup survival caused by domestic dog disease. The other population began in 1987 on the Albemarle Peninsula of northeastern North Carolina near the Outer Banks region; this population is currently the only population of red wolves known to exist in the wild.

**Threats**:

Habitat Loss and Fragmentation: Habitat fragmentation remains one of the biggest challenges in red wolf recovery. Fragmentation contributed to the initial decline of the red wolf species. Now, fragmentation threatens red wolves in the North Carolina NEP via proposed barriers and habitat conversion on both public and private land. Because red wolves are wide-ranging in their movements, conservation of large tracts of wildlife habitat is beneficial across their historic range.

Overutilization: We do not consider over-utilization for commercial, recreational, scientific, or educational purposes to be a direct threat to the species. Red wolves are not legally hunted or trapped, aside from incidental or special permitted events. All red wolves are currently located either in captive breeding facilities, at two island propagation locations, and in one managed and monitored NEP that occurs across the 1.7 million acre Albemarle Peninsula.

Disease/Predation: Canid diseases remain a serious threat to the red wolf NEP and to captive red wolves. The magnitude of risk to the red wolf species overall is partly offset by captive red wolves held in 40 facilities across America. Risk of disease is partly offset by intensive vaccination programs for both wild and captive red wolves. However, veterinary research scientists caution we should not presume vaccinated red wolves are adequately protected against diseases. An example is CPV2 parvovirus, a disease which could have serious impacts upon pup survival in the NEP. Upon investigation it was found that titers against parvovirus are not detectable in a large portion of vaccinated red wolves, indicating the NEP is still very much at risk. Natural predation on red wolves is minimal, especially since red wolves are one of the top predators in their ecosystem.

Inadequacy of Regulatory Mechanisms: The red wolf remains federally listed as endangered throughout its historic range in the southeast USA west to central Texas. However, the red wolf was recognized as extinct in the wild in 1980 when the last known red wolves were brought into captivity. Therefore, red wolves in captivity are endangered and wolves in NC are designated as a NEP. We recognize that NEP status has been effective in red wolf conservation and in allowing flexibility for management. Such flexibility allows less regulation while addressing needs in human safety and property. However, we also believe we, in cooperation with the state, must give consideration to the current experimental rule to increase flexibility, improve clarification, and address additional issues related to wolf mortality, law enforcement, and coyote management.

Other natural or human factors: Gunshot mortality and vehicular strikes are serious threats to red wolves in the North Carolina NEP. In particular, we believe gunshot mortality must be addressed in order to maintain the upward growth trend of the red wolf NEP. Eastern coyotes, (*Canis latrans* var.) continue to be a threat to the red wolf. In North Carolina, we have made good progress in managing eastern coyotes and their gene introgression threat. Yet, an unusually large increase in eastern coyotes was detected on the peninsula in 2006 and 2007. Gunshot mortality of red wolves has created open territories for coyotes. Anecdotal information exists that suggests the accidental release of coyotes from hunting enclosures, the import of coyotes for hunting, and the deliberate release of coyotes on the peninsula is also occurring.

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**Current Status:** Considering the grave challenges red wolves faced when first listed as endangered in 1967, efforts to restore, recover and conserve them have been remarkably successful. Red wolves have been transformed from nearly extinct at a count of only 14 individuals in the 1970's to a captive population of 208 and a wild NEP population estimated at 130. The red wolf was pulled back from the brink of extinction and given a fighting chance for survival. Today, gunshot mortality removes breeders from the wild NEP, along with habitat fragmentation from mounting development, invites eastern coyotes to remain in the NEP area and occupy red wolf habitat. Releases of coyotes and canid disease outbreaks are additional threats we must work to reduce. Interruption of gene flow by geographical barriers, habitat alterations and limited genetic variability are new concerns we must manage in the restored population. The captive-breeding program is restoring the demographic stability of the captive population. However, we must continue to manage the adverse effects of inbreeding and age on reproduction, as well as seek additional facilities for captive reproduction, to meet recovery goals and maintain the demographic and genetic stability of the population.

**Target:** Prevent species' extinction and improve the species distribution within its range.

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| **Measure:** Decrease the magnitude of prevailing threats like gunshot mortality and coyote importation and their impact on the red wolf; Increase current distribution of the red wolf on the peninsula within the 5-county recovery area; Increase population numbers and enhance and augment the restored population in terms of genetic diversity, pup production, and the number of wolf family groups (packs); Improve and maintain demographic and genetic stability of the captive population of red wolves. | | | | | | | |
| **Actions:** | | | | | | | |
| RA=Recovery Action; 1st # = priority; 2nd # = task no. | FY 09 | FY 10 | FY 11 | FY12 | FY 13 | Costs | Responsible Parties and Notes |
| Develop an effective disease prevention and management plan for red wolves and other canid species in northeastern North Carolina | | X | X | | | $28,000 total needed | FWS, North Carolina State University Veterinary School, and North Carolina Wildlife Resources Commission |
| Updating the red wolf 4(d) rule in cooperation with the State to reflect additional strength and flexibility needed for landowners, land managers, hunters, trappers, communities, red wolves and law enforcement officers. RA: 2-3.1.10 | X | X | X | X | X | $80,000 - $160,000 total needed | FWS and partners, North Carolina Wildlife Resources Commission |
| Launch enhanced, expanded and new efforts to educate the local community and visitors about red wolf conservation and ecosystem values and to resolve red wolf mortality problems | X | X | X | X | | $40,200 total needed | FWS with partners |
| Continue coordinating a rigorous analysis of territory, habitat, and space use patterns to conclude a population viability model | X | X | | | | $36,000 total needed | Trent University |
| Research red wolf/eastern coyote interactions to compare movements, home ranges and habitat use, develop models to quantify the spatial and temporal aspects of interaction, and predict conditions contributing to or deterring hybridization. RA:2-3.1.5 | X | X | X | | | $64,000 total needed; $30,000 already funded | FWS, USGS (Univ. of TN and LSU) and the North Carolina Wildlife Resources Commission |
| Revise Red Wolf Recovery Plan and AZA Red Wolf Species Survival Plan to include many advances in genetic science, population | | | | X | X | $65,000 total needed | FWS with partners |

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| dynamics, captive breeding, and other knowledge or techniques. | | | | | | | |
| Begin plans to restore second and third populations of red wolves to new geographic locations, including the scientific assessment & ranking of sites, and public scoping, comment periods, and NEPA. RA: 2-3.1.1,2,3,6 | | | X | X | X | $90,000 total needed | FWS with partners |
| Conduct a red wolf genetic uniqueness study and further evaluate genetic and evolutionary relationships of red wolves, Algonquin wolves, coyotes, and gray wolves in North America. RA: 3-6.3 | X | X | X | | | $40,000 total needed – funding already secured via outside sources | FWS, UCLA and Univ. of Idaho |

| **Ongoing and Future Conservation Actions** | **Responsible Party** | **Estimated Cost** |
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| Maintain island propagation sites for translocation of wolves into the NEP to increase genetic variability and offset breeder loss to gunshot. | FWS | $69,000 each year for both sites (34k to St. Vincent & 35k to Cape Romain) |
| Maintain and stabilize the wild red wolf population in eastern North Carolina in terms of distribution and available habitat | FWS | $143,000 estimated each year to cover aerial telemetry, genetic identification of canids, vets supplies/services, capture equipment, telemetry equipment and fuel. |
| Maintain a cooperative agreement with the Point Defiance Zoo & Aquarium (PDZA) for coordination of the AZA Red Wolf SSP to maintain the red wolf genome. | PDZA | Approximately $220,000 each year in addition to in-kind contribution of $2.2mil in private funds. |

**Role of other Agencies**: As coyotes continue to pose a threat to red wolf recovery via hybridization, and recognizing the North Carolina Wildlife Resource Commission has sole authority in management of canids such as coyotes and foxes, we would like to work cooperatively with the Commission on approaches to managing canids and address mutual issues of concern. The Service also is looking to collaborate with the Commission and other partners in revising the Red Wolf Recovery Plan and in updating the current rule for the experimental population so that recovery of the red wolf can continue.

Continued cooperation is expected between the Service and the Department of Defense which owns property that is managed as aerial bombing ranges for the U.S. Air Force and Navy. Cooperation consists of permission for aerial telemetry flights within restricted airspace on a consistent basis as well as entrance into the ranges for field management of the local red wolf population.

The continued expansion of U.S. Highway 64 through portions of the red wolf recovery area could mean impacts of habitat fragmentation, barriers to red wolf gene flow, and increases in red wolf mortality from vehicle strikes. The Service is currently partnering with the Federal Highway Administration and the North Carolina Department of Transportation to assist in addressing the recovery needs of the red wolf population during highway expansions.

The recovery of the red wolf will require continued support from cooperating agencies and other stakeholders, and the development of new partnerships with governmental and non-governmental organizations and agencies.

**Role of Other ESA Programs**: Coordination with other federal agencies under Section 7 (interagency coordination) will assist in avoiding and minimizing impacts from federal projects to the red wolf and could provide opportunities or activities that will contribute to the conservation and recovery of the red wolf. In addition, through Section 6 funding, opportunities with the State may be utilized for conservation efforts.

With a large portion of the NEP recovery area comprised of private lands, opportunities exist to utilize other ESA programs in the conservation and recovery of red wolves. For example, a revision of the experimental designation under Section 4 could enhance the ability of the recovery program to be more effective. Also, Section 10 permits could include scientific programs to promote recovery and could also include HCPs for land acquisition to provide additional habitats.

**Role of Other FWS Programs**: One of the pre-release captive wolf facilities is located on the Alligator River National Wildlife Refuge. In addition, wild red wolves are managed on this and two other refuges within the recovery area, including Mattamuskeet NWR and Pocosin Lakes NWR. While red wolf project personnel are responsible for the management of the wolf population, direct assistance is provided by refuge management and staff.

The red wolf is identified as a landscape-wide focus species by the Eastern North Carolina and Southeastern Virginia Strategic Habitat Conservation Planning Team. The wolf is also identified as a species likely imperiled by sea level rise and climate change amidst numerous

anthropomorphic pressures across the coastal landscape of eastern North Carolina. Simultaneous recovery planning and strategic habitat conservation planning, coupled with wildlife refuge planning, are vital to long-term red wolf recovery.

Coordination with Ecological Services Office contributes to the recovery of the red wolf and can include cooperation through Section 7 projects, Section 10 permits, and habitat restoration through Partners for Fish and Wildlife.

**Revised Action Plan Due:** 2014 [The Red Wolf Recovery Coordinator position was vacated on April 18, 2009, and is expected to be filled before the end of fiscal year 2009. This action plan was prepared by the acting Coordinator, with the assistance of local Fish and Wildlife Service offices, and is consistent with recent actions and the findings of an evaluation and review of the species. However, the schedule of actions in this plan may require revision before the action plan is scheduled to be revised.]